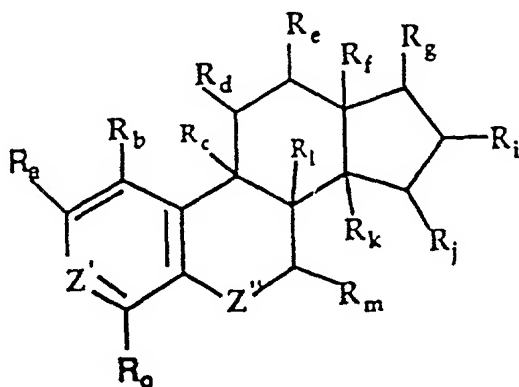


Claims

1           1. A method for treating a mammalian disease  
2 characterized by abnormal cell mitosis, said method  
3 comprising administering to a mammal a cell-mitosis-  
4 inhibiting compound of the formula below, said compound  
5 being administered in an amount sufficient to inhibit cell  
6 mitosis:

7



8 wherein:

9 I. R<sub>a</sub>-R<sub>o</sub> are defined as follows:

10 A) each R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>, R<sub>d</sub>, R<sub>e</sub>, R<sub>f</sub>, R<sub>g</sub>, R<sub>h</sub>, R<sub>i</sub>, R<sub>j</sub>, R<sub>k</sub>, R<sub>l</sub>,  
11 R<sub>m</sub>, R<sub>o</sub>, independently is -R<sub>1</sub>, -OR<sub>1</sub>,

12  $-\text{OCOR}_1, -\text{SR}_1, -\text{F}, -\text{NHR}_2, -\text{Br}, \text{ or } -\text{I};$  and  $\text{R}_g$   
 13 is  $-\text{R}_1, -\text{OR}_1, -\text{OCOR}_1, -\text{SR}_1, -\text{F}, -\text{NHR}_2, -\text{Br},$   
 14  $-\text{I}, \text{ or } -\text{C}\equiv\text{CH};$

15 or

16 B) each  $\text{R}_a, \text{R}_b, \text{R}_c, \text{R}_f, \text{R}_k, \text{R}_l, \text{R}_o,$   
 17 independently is  $-\text{R}_1, -\text{OR}_1, -\text{OCOR}_1, -\text{SR}_1,$   
 18  $-\text{F}, -\text{NHR}_2, -\text{Br}, \text{ or } -\text{I};$  and each  $\text{R}_d, \text{R}_e, \text{R}_i,$   
 19  $\text{R}_j, \text{R}_m,$  independently is  $=\text{O}, -\text{R}_1, -\text{OR}_1,$   
 20  $-\text{OCOR}_1, -\text{SR}_1, -\text{F}, -\text{NHR}_2, -\text{Br}$  or  $-\text{I};$  and  $\text{R}_g$   
 21 is  $=\text{O}, -\text{R}_1, -\text{OR}_1, -\text{OCOR}_1, -\text{SR}_1, -\text{F}, -\text{NHR}_2,$   
 22  $-\text{Br}, -\text{I}, \text{ or } -\text{C}\equiv\text{CH};$

23 and

24 II.  $\text{Z}'$  is defined as follows:

25  
 26  
 27 A)  $\text{Z}'$  is  $\text{X},$  where  $\text{X}$  is  $>\text{COR}_1, >\overset{\text{O}}{\underset{|}{\text{CC}}}-\text{R}_1,$

28  
 29  $>\overset{\text{O}}{\underset{|}{\text{CC}}}-\text{OR}_1, >\overset{\text{OH}}{\underset{|}{\text{CC}}}-\text{R}_1, >\overset{\text{OH}}{\underset{|}{\text{CC}}}-\text{OR}_1;$   
 30

31 or

32 B)  $\text{Z}'$  is  $=\text{C}-\text{X}'-$  or  $-\text{X}'-\text{C}=,$  where  $\text{R}_n$   
 33  $\underset{|}{\text{R}_n}$   $\underset{|}{\text{R}_n}$   
 34  
 35 is  $-\text{R}_1, -\text{OR}_1, -\text{SR}_1, -\text{F}, -\text{NHR}_2, -\text{Br}$  or  $-\text{I};$   
 36 and  $\text{X}'$  is  $\text{X},$  as defined above; or  $\text{X}'$  is  
 37  $>\text{C}=\text{O};$

38 and

39 III.  $\text{Z}''$  is defined as follows:

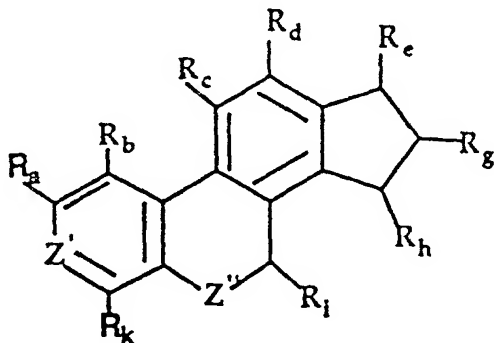
40  
 41  
 42 A)  $\text{Z}''$  is  $\text{Y},$  where  $\text{Y}$  is  $-\text{O}-, -\text{N}-, >\overset{\text{R}_1}{\underset{|}{\text{CH}}}\text{R}_1,$   
 43  
 44  $>\text{C}=\text{O}, >\overset{\text{R}_1}{\underset{|}{\text{C}}}-(\text{CH}_2)_n\text{OR}_2,$   
 45

- 46  
47  
48 
$$\begin{array}{c} R_1 \quad \quad O \quad \quad R_1 \quad \quad O \\ | \quad \quad | \quad \quad | \quad \quad | \\ >C-(CH_2)_n-CR_2, >C-(CH_2)_n-C-OR_2, \end{array}$$
- 49  
50  
51 
$$\begin{array}{c} R_1 \quad \quad OH \quad \quad R_1 \quad \quad OH \\ | \quad \quad | \quad \quad | \quad \quad | \\ >C-(CH_2)_n-CHR_2, >C-(CH_2)_n-CH-OR_2, \end{array}$$
- 52  
53  
54 
$$\begin{array}{c} R_1 \quad \quad O \quad \quad R_1 \quad \quad OH \\ | \quad \quad | \quad \quad | \quad \quad | \\ >C-NH(CH_2)_n-CR_2, >C-NH(CH_2)_n-CHR_2, \end{array}$$
- 55  
56  
57 
$$\begin{array}{c} R_1 \quad \quad OH \\ | \quad \quad | \\ >C-NH(CH_2)_n-CH-OR_2, \end{array}$$
- 58  
59  
60 
$$\begin{array}{c} R_1 \quad \quad O \quad \quad R_1 \\ | \quad \quad | \quad \quad | \\ >C-NH(CH_2)_n-C-OR_2, >C-NH(CH_2)_n-OR_2 \end{array}$$
- 61  
62  
63 
$$\begin{array}{c} R_1 \quad \quad \quad R_1 \quad \quad O \\ | \quad \quad \quad | \quad \quad | \\ >C-NH(CH_2)_n-R_2, >C(CH_2)_nNHCR_2, \end{array}$$
- 64  
65  
66 
$$\begin{array}{c} R_1 \quad \quad O \\ | \quad \quad | \\ >C-(CH_2)_n-NHC-OR_2, \end{array}$$
- 67  
68  
69 
$$\begin{array}{c} R_1 \quad \quad OH \quad \quad R \quad \quad OH \\ | \quad \quad | \quad \quad | \quad \quad | \\ >C-(CH_2)_n-NH-CHR_2, >C-(CH_2)_n-NH-COR_2, \text{ or} \end{array}$$
- 70  
71  
72 
$$\begin{array}{c} R_1 \\ | \\ >C-(CH_2)_n-NH-CH_2OR_2, \text{ where } n \text{ is } 0-6; \end{array}$$
- 73 or
- 74  
75  
76  
77  
78 and  
79  
80  
81
- B) 
$$\begin{array}{c} Z'' \text{ is } -Y-CH- \text{ or } -CH-Y- \text{ where } R_p \\ | \quad \quad | \\ R_p \quad \quad R_p \end{array}$$
- is  $-R_1, -OR_1, -SR_1, -F, -NHR_2, -Br$  or  $-I$ ;
- IV. provided that when each  $R_b, R_c, R_d, R_e, R_i, R_j, R_k,$   
 $R_l, R_m$  and  $R_o$  is H;  
 $R_f$  is  $-CH_3$ ;

82  $R_g$  is  $-OH$ ;  
 83  $Z'$  is  $>COH$ ; and  
 84  $Z''$  is  $>CH_2$ ;  
 85 then  $R_a$  is not  $-H$ ;  
 86 where, in each formula set forth above, each  $R_1$  and  $R_2$   
 87 independently is  $-H$ , or substituted or unsubstituted alkyl,  
 88 alkenyl or alkynyl group of 1-6 carbons.

1 2. A method for treating a mammalian disease  
 2 characterized by abnormal cell mitosis, said method  
 3 comprising administering to a mammal a cell-mitosis-  
 4 inhibiting compound of the formula below, said compound  
 5 being administered in an amount sufficient to inhibit cell  
 6 mitosis:

7



8 wherein:

9 I.  $R_a-R_k$  are defined as follows:

10 A) each  $R_a, R_b, R_c, R_d, R_g, R_h, R_i, R_k$   
11 independently is  $-R_1, -OR_1, -OCOR_1, -SR_1,$   
12  $-F, -NHR_2, -Br, \text{ or } -I$ ; and  $R_e$  is  $-R_1, -OR_1,$   
13  $-OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$  or  $-C\equiv CH$ ;

14 or

15 B) each  $R_a, R_b, R_c, R_d, R_k$ , independently is  
16  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br,$  or  
17  $-I$ ; and each  $R_{eg}, R_h, R_i$ , independently is  
18  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F, -Br,$  or  
19  $-I$ ; and  $R_e$  is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1,$   
20  $-F, -Br, -I$  or  $-C\equiv CH$ ;

21 and

22 II.  $Z'$  is defined as follows:

23  
24  
25 A)  $Z'$  is X, where X is  $\begin{array}{c} O \\ | \\ >COR_1, >CC-R_1, \end{array}$   
26  
27  $\begin{array}{c} O \\ | \\ >CC-OR_1, \end{array}$   $\begin{array}{c} OH \\ | \\ >CC-R_1, \end{array}$   $\begin{array}{c} OH \\ | \\ >C-C-OR_1; \end{array}$   
28

29 or

30 B)  $Z'$  is  $\begin{array}{c} =C-X'- \\ | \\ R_n \end{array}$  or  $\begin{array}{c} -X'-C= \\ | \\ R_n \end{array}$ , where  $R_n$   
31  
32 is  $-R_1, -OR_1, -SR_1, -F, -NHR_2, -Br$  or  $-I$ ,  
33 and  $X'$  is X, as defined above;  
34  
35 or  $X'$  is also  $>C=O$ ;

36 and

37 III.  $Z''$  is defined as follows:

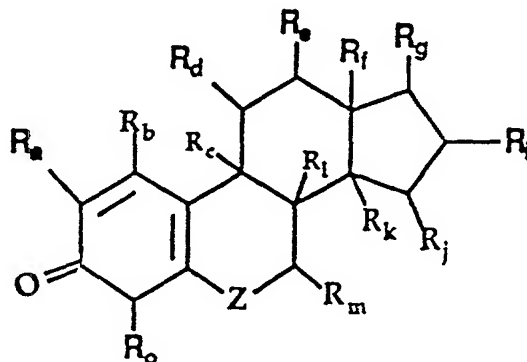
38  
39  
40 A)  $Z''$  is Y, where Y is  $\begin{array}{c} R_1 \\ | \\ -O-, -N-, >CHR_1, \end{array}$

- 41  
42  
43  $\text{>C=O, } \begin{array}{c} \text{R}_1 \\ | \\ \text{>C-(CH}_2\text{)}_n\text{OR}_2, \end{array}$
- 44  
45  $\begin{array}{c} \text{R}_1 \quad \quad \text{O} \quad \quad \text{R}_1 \quad \quad \text{O} \\ | \quad \quad | \quad \quad | \quad \quad | \\ \text{>C-(CH}_2\text{)}_n\text{-CR}_2, \text{ >C-(CH}_2\text{)}_n\text{-C-OR}_2, \end{array}$
- 46  
47  
48  $\begin{array}{c} \text{R}_1 \quad \quad \text{OH} \quad \quad \text{R}_1 \quad \quad \text{OH} \\ | \quad \quad | \quad \quad | \quad \quad | \\ \text{>C-(CH}_2\text{)}_n\text{-CHR}_2, \text{ >C-(CH}_2\text{)}_n\text{-CH-OR}_2, \end{array}$
- 49  
50  
51  $\begin{array}{c} \text{R}_1 \quad \quad \text{O} \quad \quad \text{R}_1 \quad \quad \text{OH} \\ | \quad \quad | \quad \quad | \quad \quad | \\ \text{>C-NH(CH}_2\text{)}_n\text{-CR}_2, \text{ >C-NH(CH}_2\text{)}_n\text{-CHR}_2, \end{array}$
- 52  
53  
54  $\begin{array}{c} \text{R}_1 \quad \quad \text{OH} \\ | \quad \quad | \\ \text{>C-NH(CH}_2\text{)}_n\text{-CH-OR}_2, \end{array}$
- 55  
56  
57  $\begin{array}{c} \text{R}_1 \quad \quad \text{O} \quad \quad \text{R}_1 \\ | \quad \quad | \quad \quad | \\ \text{>C-NH(CH}_2\text{)}_n\text{-C-OR}_2, \text{ >C-NH(CH}_2\text{)}_n\text{-OR}_2, \end{array}$
- 58  
59  
60  
61  $\begin{array}{c} \text{R}_1 \\ | \\ \text{>C-NH(CH}_2\text{)}_n\text{-R}_2, \end{array}$
- 62  
63  $\begin{array}{c} \text{R}_1 \quad \quad \text{O} \quad \quad \text{R}_1 \quad \quad \text{O} \\ | \quad \quad | \quad \quad | \quad \quad | \\ \text{>C(CH}_2\text{)}_n\text{NHCR}_2, \text{ >C-(CH}_2\text{)}_n\text{-NHC-OR}_2, \end{array}$
- 64  
65  
66  $\begin{array}{c} \text{R}_1 \quad \quad \text{OH} \quad \quad \text{R} \quad \quad \text{OH} \\ | \quad \quad | \quad \quad | \quad \quad | \\ \text{>C-(CH}_2\text{)}_n\text{-NH-CHR}_2, \text{ >C-(CH}_2\text{)}_n\text{-NH-COR}_2, \text{ or} \end{array}$
- 67  
68  
69  $\begin{array}{c} \text{R}_1 \\ | \\ \text{>C-(CH}_2\text{)}_n\text{-NH-CH}_2\text{OR}_2, \text{ where } n \text{ is } 0-6; \end{array}$
- 70  
71 or
- 72 B) Z" is -Y-CH- or -CH-Y-, where R<sub>p</sub> is
- 73  $\begin{array}{c} | \quad \quad | \\ \text{R}_p \quad \quad \text{R}_p \end{array}$
- 74 -R<sub>1</sub>, -OR<sub>1</sub>, -SR<sub>1</sub>, -F, -NHR<sub>2</sub>, -Br or -I;
- 75

76 where, in each formula set forth above, each  $R_1$  and  $R_2$   
77 independently is  $-H$ , or substituted or unsubstituted alkyl,  
78 alkenyl or alkynyl group of 1-6 carbons.

1 3. A method for treating a mammalian disease  
2 characterized by abnormal cell mitosis, said method  
3 comprising administering to a mammal a cell-mitosis-  
4 inhibiting compound of the formula below, said compound  
5 being administered in an amount sufficient to inhibit cell  
6 mitosis:

7



8 wherein:

9 I.  $R_a-R_o$  are defined as follows:

10 A) each  $R_a, R_b, R_c, R_d, R_e, R_f, R_i, R_j, R_k, R_l,$   
11  $R_m, R_o$  independently is  $-R_1, -OR_1, -OCOR_1,$   
12  $-SR_1, -F, -NHR_2, -Br, \text{ or } -I$ ; and  $R_g$  is  $-R_1,$   
13  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$  or  
14  $-C\equiv CH$ ;

15 or

16 B) each  $R_a, R_b, R_c, R_f, R_k, R_l$ , independently  
17 is  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br,$   
18 or  $-I$ ; and each  $R_d, R_e, R_i, R_j, R_m, R_o$   
19 independently is  $=O, -R_1, -OR_1, -OCOR_1,$   
20  $-SR_1, -F, -NHR_2, -Br,$  or  $-I$ ; and  $R_g$  is  $=O,$   
21  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$   
22 or  $-C\equiv CH$ ;

23 and

24 II. Z is defined as follows:

25  
26  
27 A) Z is Y, where Y is  $-O-, -N-, >CHR_1,$

28  
29  
30 
$$>C=O, >C-\overset{\overset{R_1}{|}}{(CH_2)_n}OR_2,$$

31  
32  
33 
$$>C-\overset{\overset{R_1}{|}}{(CH_2)_n}-\overset{\overset{O}{|}}{C}R_2, >C-\overset{\overset{R_1}{|}}{(CH_2)_n}-\overset{\overset{O}{|}}{C}-OR_2,$$

34  
35  
36 
$$>C-\overset{\overset{R_1}{|}}{(CH_2)_n}-\overset{\overset{OH}{|}}{C}HR_2,$$

37  
38  
39 
$$>C-\overset{\overset{R_1}{|}}{(CH_2)_n}-\overset{\overset{OH}{|}}{C}H-OR_2,$$

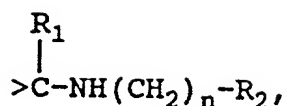
40  
41  
42 
$$>C-\overset{\overset{R_1}{|}}{NH}(CH_2)_n-\overset{\overset{O}{|}}{C}R_2, >C-\overset{\overset{R_1}{|}}{NH}(CH_2)_n-\overset{\overset{OH}{|}}{C}HR_2,$$

43  
44  
45 
$$>C-\overset{\overset{R_1}{|}}{NH}(CH_2)_n-\overset{\overset{OH}{|}}{C}H-OR_2,$$

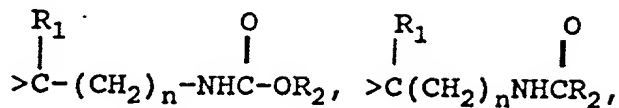
46  
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48 
$$>C-\overset{\overset{R_1}{|}}{NH}(CH_2)_n-\overset{\overset{O}{|}}{C}-OR_2, >C-\overset{\overset{R_1}{|}}{NH}(CH_2)_n-OR_2,$$



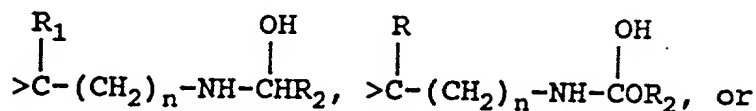
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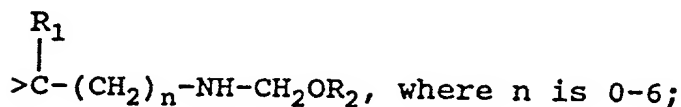
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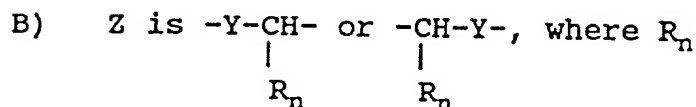


59  
60  
61



62 or

63  
64  
65



66

is  $-R_1$ ,  $-OR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$  or  $-I$ ;

67

where, in each formula set forth above, each  $R_1$  and  $R_2$

68

independently is  $-H$ , or substituted or unsubstituted alkyl,

69

alkenyl or alkynyl group of 1-6 carbons.

1

4. A method for treating a mammalian disease

2

characterized by abnormal cell mitosis, said method

3

comprising administering to a mammal a cell-mitosis-

4

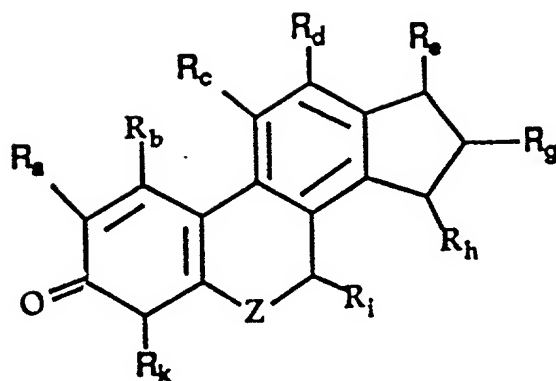
inhibiting compound of the formula below, said compound

5

being administered in an amount sufficient to inhibit cell

6

mitosis:



7 wherein:

8 I.  $R_a-R_k$  are defined as follows:

9 A) each  $R_a, R_b, R_c, R_d, R_g, R_h, R_i, R_k$   
 10 independently is  $-R_1, -OR_1, -OCOR_1, -SR_1,$   
 11  $-F, -NHR_1, -Br, \text{ or } -I$ ; and  $R_e$  is  $-R_1, -OR_1,$   
 12  $-OCOR_1, -SR_1, -F, -NHR_1, -Br, -I$  or  $-C\equiv CH$ ;

13 or

14 B) each  $R_a, R_b, R_c, R_d$ , independently is  $-R_1,$   
 15  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br, \text{ or } -I$   
 16 and each  $R_g, R_h, R_i, R_k$  independently is  
 17  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br$   
 18 or  $-I$ ; and  $R_e$  is  $=O, -R_1, -OR_1, -OCOR_1,$   
 19  $-SR_1, -F, -NHR_1, -Br, -I$  or  $-C\equiv CH$ ;

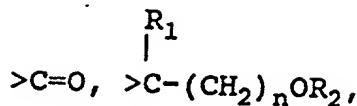
20 and

21 II.  $Z$  is defined as follows:

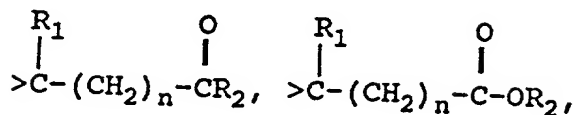
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24

A) Z is Y, where Y is  $\begin{array}{c} R_1 \\ | \\ -O-, -N-, >CHR_1, \end{array}$

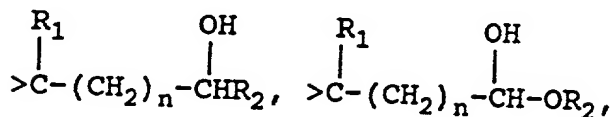
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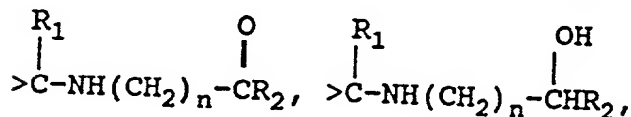
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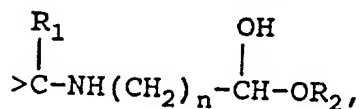
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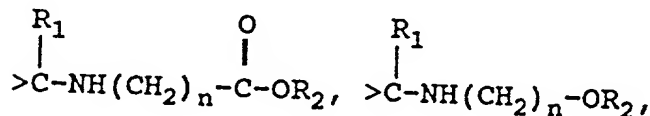
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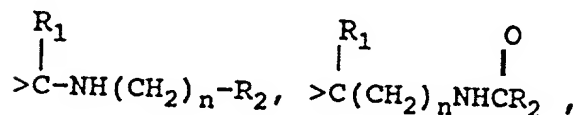
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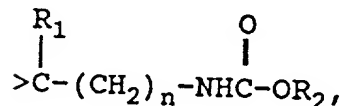
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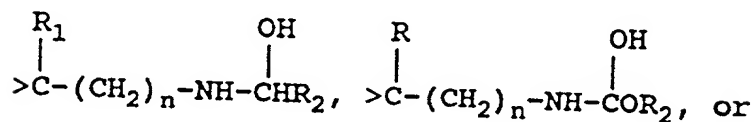
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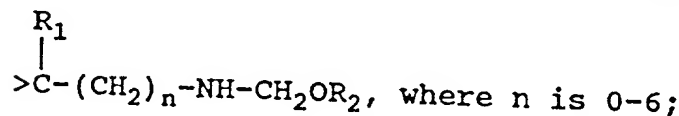
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54



55 or

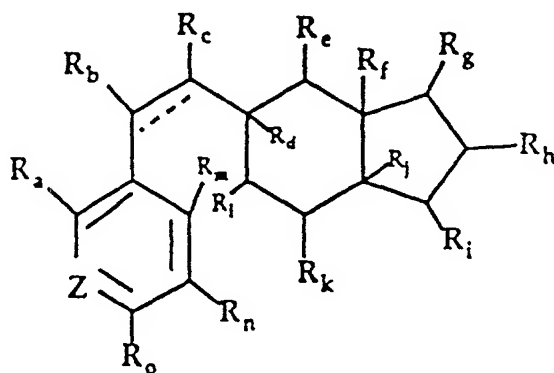
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57  
58

B) Z is  $\begin{array}{c} -Y-CH- \\ | \\ R_n \end{array}$  or  $\begin{array}{c} -CH-Y- \\ | \\ R_n \end{array}$ , where  $R_n$

59 is  $-R_1$ ,  $-OR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$  or  $-I$ ;  
60 where, in each formula set forth above, each  $R_1$  and  $R_2$   
61 independently is  $-H$ , or substituted or unsubstituted alkyl,  
62 alkenyl or alkynyl group of 1-6 carbons.

1 5. A method for treating a mammalian disease  
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4 inhibiting compound of the formula below, said compound  
5 being administered in an amount sufficient to inhibit cell  
6 mitosis:

7



8 wherein:

9 I.  $R_a$ - $R_o$  are defined as follows:

10 A) each  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ ,  $R_e$ ,  $R_f$ ,  $R_g$ ,  $R_h$ ,  $R_j$ ,  $R_k$ ,  
11  $R_l$ ,  $R_m$ ,  $R_n$ ,  $R_o$  independently is  $-R_1$ ,  $-OR_1$ ,  
12  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$ , or  $-I$ ; and  $R_i$   
13 is  $-R_1$ ,  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$ ,  
14  $-I$  or  $-C\equiv CH$ ;

15 or

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17

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21

22

23 or

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B) each  $R_a, R_d, R_f, R_j, R_m, R_n, R_o$   
independently is  $-R_1, -OR_1, -OCR_1, -SR_1,$   
 $-F, -NHR_2, -Br, \text{ or } -I$ ; and each  $R_b, R_c, R_e,$   
 $R_g, R_h, R_k, R_l$  independently is  $=O,$   
 $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br$  or  
 $-I$ ; and  $R_i$  is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1,$   
 $-F, -Br, -I$  or  $-C\equiv CH$ ;

C) each  $R_a, R_b, R_c, R_d, R_f, R_j, R_m, R_n, R_o$   
independently is  $-R_1, -OR_1, OCR_1, -SR_1, -F,$   
 $-NHR_2, -Br, -I$  and each  $R_e, R_g, R_h, R_k, R_l$   
independently is  $=O, -R_1, -OR_1, -OCOR_1,$   
 $-SR_1, -F, -NHR_1, -Br$  or  $-I$ ; and  $R_i$  is  $=O,$   
 $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -Br, -I$  or  
 $-C\equiv CH$ ;

31 II. Z is defined as follows:

32

33

34

A) Z is X, where X is  $>COR_1, >\overset{O}{\underset{|}{CC}}-R_1, >\overset{O}{\underset{|}{CC}}-OR_1,$

35

36

37

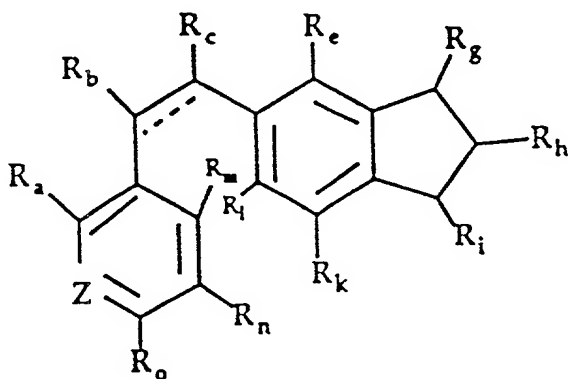
$\overset{OH}{\underset{|}{>CC}}-R_1, \overset{OH}{\underset{|}{>CC}}-OR;$

38 or

39 B) Z is  $\begin{array}{c} \text{=C-X'-} \\ | \\ \text{R}_p \end{array}$  or  $\begin{array}{c} \text{-X'-C=} \\ | \\ \text{R}_p \end{array}$ , where  $\text{R}_p$   
 40  
 41  
 42 is  $-\text{R}_1$ ,  $-\text{OR}_1$ ,  $-\text{SR}_1$ ,  $-\text{F}$ ,  $-\text{NHR}_2$ ,  $-\text{Br}$  or  $-\text{I}$ ;  
 43 and  $\text{X}'$  is  $\text{X}$ , as defined above;  
 44 or  $\text{X}'$  is  $>\text{C}=\text{O}$ ;  
 45 where, in each formula set forth above, each  $\text{R}_1$  and  $\text{R}_2$   
 46 independently is  $-\text{H}$ , or substituted or unsubstituted alkyl,  
 47 alkenyl or alkynyl group of 1-6 carbons; and the bond  
 48 indicated by  $\text{C}\bullet\bullet\bullet\text{C}$  is absent or, in combination with the  $\text{C}-\text{C}$   
 49 bond, is the unit  $\text{HC}=\text{CH}$ .

1 6. A method for treating a mammalian disease  
 2 characterized by abnormal cell mitosis, said method  
 3 comprising administering to a mammal a cell-mitosis-  
 4 inhibiting compound of the formula below, said compound  
 5 being administered in an amount sufficient to inhibit cell  
 6 mitosis:

7



8 wherein:

9 I.  $R_a-R_o$  are defined as follows:

10 A) each  $R_a, R_b, R_c, R_e, R_g, R_h, R_k, R_l, R_m, R_n,$   
11  $R_o$  independently is  $-R_1, -OR_1, -OCOR_1,$   
12  $-SR_1, -F, -NHR_2, -Br, \text{ or } -I$ ; and  $R_i$  is  $-R_1,$   
13  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$  or  
14  $-C\equiv CH$ ;

15 or

16 B) each  $R_a, R_e, R_l, R_m, R_n, R_o$  independently  
17 is  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br,$   
18  $-I$  and each  $R_b, R_c, R_g, R_h$  is  $=O, -R_1,$   
19  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br$  or  $-I$ ;  
20 and  $R_i$  is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F,$   
21  $-NHR_1, -Br, -I$  or  $-C\equiv CH$ ;

22 or

23 C) each  $R_a, R_b, R_c, R_e, R_k, R_m, R_n, R_o$   
24 independently is  $-R_1, -OR_1, -OCOR_1, -SR_1,$   
25  $-F, -NHR_2, -Br, -I$ , and each  $R_h, R_i$   
26 independently is  $=O, -R_1, -OR_1, -OCOR_1,$   
27  $-SR_1, -F, -NHR_1, -Br$  or  $-I$ ; and  $R_l$  is  $=O,$   
28  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br, -I$   
29 or  $-C\equiv CH$ ;

30 and

31 I.  $Z$  is defined as follows:

32  
33  
34 A)  $Z$  is  $X$ , where  $X$  is  $>COR_1, \overset{O}{\overset{|}{>CC-R_1}}, \overset{O}{\overset{|}{>CC-OR_1}},$

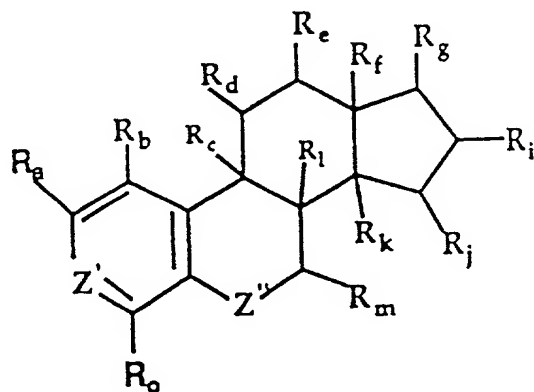
35  $\overset{OH}{\overset{|}{>CC-R_1}}, \overset{OH}{\overset{|}{>CC-OR}};$   
36  
37

38 or

39 B) Z is  $\begin{array}{c} \text{=C-X'-} \\ | \\ \text{R}_p \end{array}$  or  $\begin{array}{c} \text{-X'-C=} \\ | \\ \text{R}_p \end{array}$ , where  $\text{R}_p$   
 40  
 41  
 42 is  $-\text{R}_1$ ,  $-\text{OR}_1$ ,  $-\text{SR}_1$ ,  $-\text{F}$ ,  $-\text{NHR}_2$ ,  $-\text{Br}$  or  $-\text{I}$ ,  
 43 and  $\text{X}'$  is  $\text{X}$ , as defined above;  
 44 or  $\text{X}'$  is  $=\text{O}$ ;  
 45 where, in each formula set forth above, each  $\text{R}_1$  and  $\text{R}_2$   
 46 independently is  $-\text{H}$ , or substituted or unsubstituted alkyl,  
 47 alkenyl or alkynyl group of 1-6 carbons; and the bond  
 48 indicated by  $\text{C}\bullet\bullet\bullet\text{C}$  is absent or, in combination with the  $\text{C}-\text{C}$   
 49 bond is the unit  $\text{HC}=\text{CH}$ .

1 7. A compound of the general formula below, said  
 2 compound being a cell-mitosis-inhibiting compound:

3





4 wherein:

5 I.  $R_a-R_o$  are defined as follows:

6 (A) each  $R_a, R_b, R_c, R_d, R_e, R_f, R_i, R_j, R_k, R_l,$   
7  $R_m, R_o$ , independently is  $-R_1, -OR_1,$   
8  $-OCOR_1, -SR_1, -F, -NHR_2, -Br$ , or  $-I$ ; and  $R_g$   
9 is  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br,$   
10  $-I$  or  $-C\equiv CH$ ;

11 or

12 (B) each  $R_a, R_b, R_c, R_f, R_k, R_l, R_o$ , is  $-R_1,$   
13  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br$ , or  $-I$ ;  
14 and each  $R_d, R_e, R_i, R_j, R_m$ , independently  
15 is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2,$   
16  $-Br$  or  $-I$ ; and  $R_g$  is  $=O, -R_1, -OR_1, -OCOR_1,$   
17  $-SR_1, -F, -NHR_2, -Br, -I$  or  $-C\equiv CH$ ;

18 and

19 II.  $Z'$  is defined as follows:

20  
21  
22 A)  $Z'$  is  $X$ , where  $X$  is  $>COR_1, >\overset{O}{\underset{|}{CC}}-R_1,$

23  
24  
25  $>\overset{O}{\underset{|}{CC}}-OR_1, >\overset{OH}{\underset{|}{CC}}-R_1, >\overset{OH}{\underset{|}{CC}}-OR_1;$

26 or

27 B)  $Z'$  is  $=\underset{\underset{R_n}{|}}{C}-X'-$  or  $-X'-\underset{\underset{R_n}{|}}{C}=$ , where  $R_n$

30 is  $-R_1, -OR_1, -SR_1, -F, -NHR_2, -Br$  or  $-I$ ;  
31 or  $X'$  is  $X$ , as defined above; or  
32  $X'$  is  $>C=O$ ;

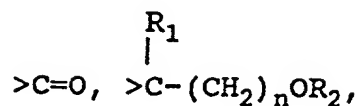
33 and

34 III.  $Z''$  is defined as follows:

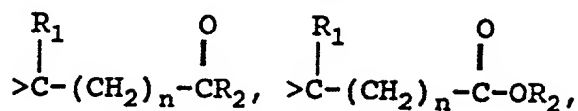
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A)  $Z''$  is Y, where Y is  $-O-$ ,  $-N-$ ,  $>CHR_1$ ,

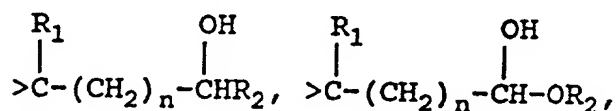
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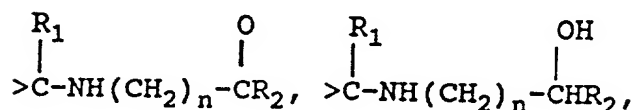
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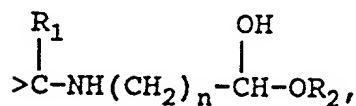
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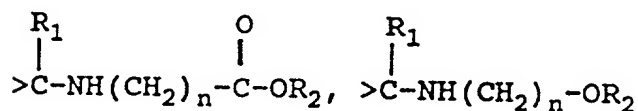
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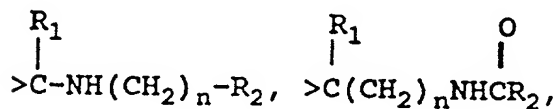
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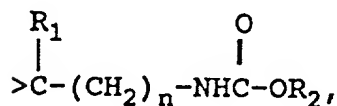
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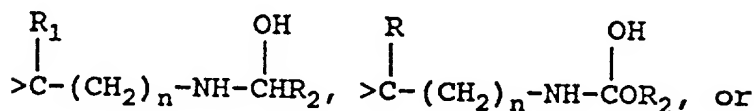
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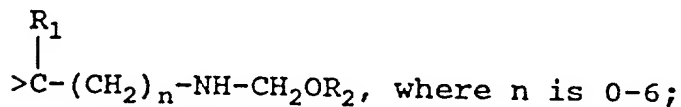
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64



65  
66  
67



68 or

69  
70  
71

B)  $Z''$  is  $-Y-CH-$  or  $-CH-Y-$  where  $R_p$

$$\begin{array}{c} R_p \quad R_p \\ | \quad | \end{array}$$

72 is  $-R_1, -OR_1, -SR_1, -F, -NHR_2, -Br$  or  $-I$ ;  
73 provided that when:

74 3) each  $R_b, R_c, R_d, R_e, R_j, R_k, R_l, R_m$  is  $-H$ ;  
75  $R_f$  is  $-CH_3$ ;

76  $R_g$  is  $-OH, -OCCH_3$ ;  
77  $R_i$  is  $-H, -OH$ , or  $=O$ ;  
78  $R_o$  is  $-H$  or  $-Br$ ;  
81  $Z'$  is  $>COH$ ; and  
82  $Z''$  is  $>CH_2$  or  $-OH$ ; then  
83  $R_a$  is not  $-F, -Br, -OH$  or  $-H$ ;

84 and

85 4) each  $R_b, R_c, R_d, R_e, R_i, R_j, R_k, R_l,$   
86  $R_m$  is  $-H$ ;  
87  $R_f$  is  $-CH_3$ ;  
88  $R_g$  is  $-OH$ ; and  
89  $Z''$  is  $>CH_2$ ; then

90  $Z'$  is not  $>COCH_3$  or  $>COCCH_3$ ; and  
91 each  $R_a, R_o$  independently or together are  
92 not  $-OCH_3$  or  $-H$ ;

95 and

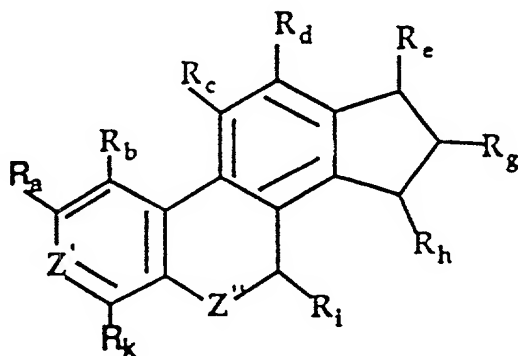
96 5) each  $R_c, R_e, R_j, R_k, R_l, R_m, R_o$  is  $-H$ ;  
97  $R_a$  is  $-H$  or  $-OCH_3$ ;  
98  $R_b$  is  $-H$  or  $-CH_3$ ;  
99  $R_d$  is  $-OH$ ;  
100  $R_f$  is  $-CH_3$ ;  
101  $R_g$  is  $=O$ ;  
102  $R_i$  is  $-OH, =O$  or  $-C\equiv CH$ ; and  
103  $Z''$  is  $>CH_2$ ; then

104  $Z'$  is not  $>COH, >COCCH_3$ , or  $-H$ ;

107 where, in each formula set forth above, each  $R_1$  and  $R_2$   
108 independently is -H, or substituted or unsubstituted alkyl,  
109 alkenyl or alkynyl group of 1-6 carbons.

1 8. A compound of the general formula below, said  
2 compound being a cell-mitosis-inhibiting compound:

3



4 wherein:

5 I.  $R_a$ - $R_k$  are defined as follows:

6 A) each  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ ,  $R_g$ ,  $R_h$ ,  $R_i$ ,  $R_k$   
7 independently is  $-R_1$ ,  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  
8  $-F$ ,  $-NHR_2$ ,  $-Br$ , or  $-I$ ; and  $R_e$  is  $-R_1$ ,  $-OR_1$ ,  
9  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$ ,  $-I$  or  $-C\equiv CH$ ;

10 or

11 B) each  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ ,  $R_k$ , is  $-R_1$ ,  $-OR_1$ ,  
12  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$ , or  $-I$ ; and  
13 each  $R_g$ ,  $R_h$ ,  $R_i$ , independently is  $=O$ ,

14  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -Br, \text{ or } -I;$   
 15 and  $R_e$  is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F,$   
 16  $-Br, -I$  or  $-C\equiv CH;$

17 and

18 I.  $Z'$  is defined as follows:

19  
 20  
 21 A)  $Z'$  is  $X$ , where  $X$  is  $>COR_1, >C_2\overset{O}{\underset{|}{C}}-R_1,$

22  
 23  
 24  $>C_2\overset{O}{\underset{|}{C}}-OR_1, >CC\overset{OH}{\underset{|}{C}}-R_1, >C\overset{OH}{\underset{|}{C}}-OR_1;$

25 or

26 B)  $Z'$  is  $=C-X'-$  or  $-X'-C=$ , where  $R_n$   
 27  $\underset{R_n}{|}$   $\underset{R_n}{|}$   
 28  
 29 is  $-R_1, -OR_1, -SR_1, -F, -NHR_2, -Br$  or  $-I,$   
 30 and  $X'$  is  $X$ , as defined above;  
 31 or  $X'$  is also  $>C=O;$

32 and

33 II.  $Z''$  is defined as follows:

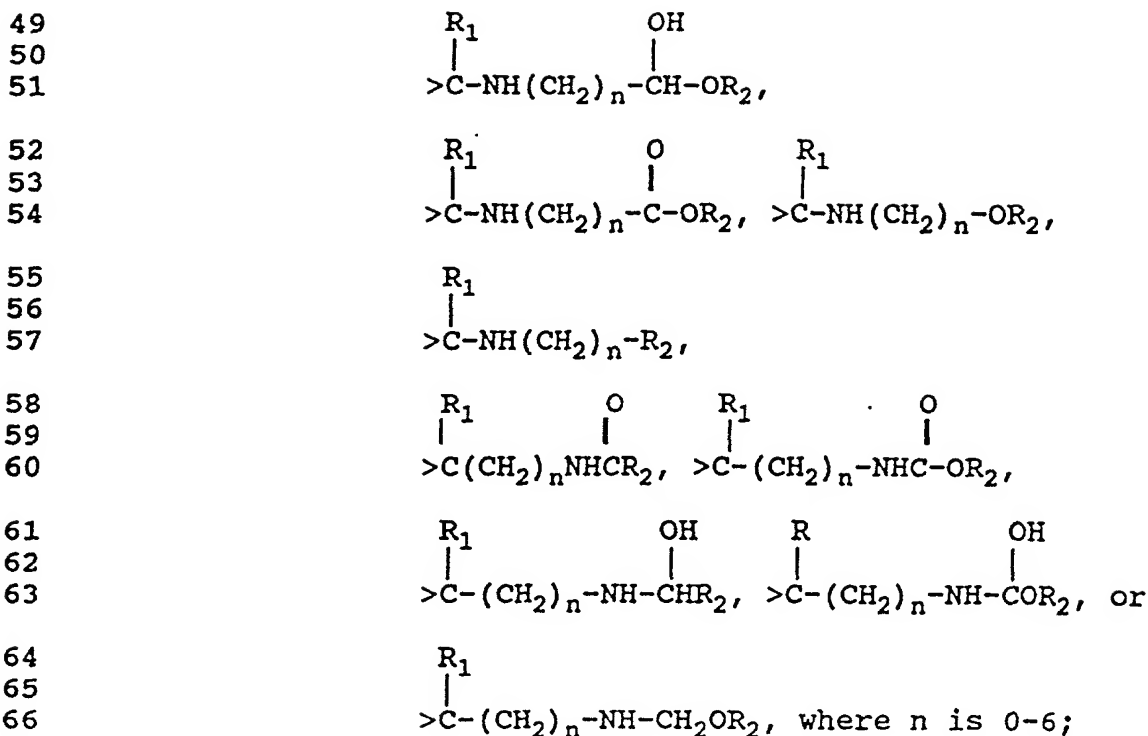
34  
 35  
 36 A)  $Z''$  is  $Y$ , where  $Y$  is  $-O-, -N-, >CHR_1,$

37  
 38  $\underset{R_1}{|}$   
 39  $>C=O, >C-(CH_2)_nOR_2,$

40  
 41  $\underset{R_1}{|}$   $\underset{O}{|}$   $\underset{R_1}{|}$   $\underset{O}{|}$   
 42  $>C-(CH_2)_n-CR_2, >C-(CH_2)_n-C-OR_2,$

43  
 44  $\underset{R_1}{|}$   $\underset{OH}{|}$   $\underset{R_1}{|}$   $\underset{OH}{|}$   
 45  $>C-(CH_2)_n-CHR_2, >C-(CH_2)_n-CH-OR_2,$

46  
 47  $\underset{R_1}{|}$   $\underset{O}{|}$   $\underset{R_1}{|}$   $\underset{OH}{|}$   
 48  $>C-NH(CH_2)_n-CR_2, >C-NH(CH_2)_n-CHR_2,$



67 or

68 B) Z" is -Y-CH- or -CH-Y-, where R<sub>p</sub> is

69 
$$\begin{array}{c} | \quad \quad \quad | \\ R_p \quad \quad \quad R_p \end{array}$$

70

71 -R<sub>1</sub>, -OR<sub>1</sub>, -SR<sub>1</sub>, -F, -NHR<sub>2</sub>, -Br or -I;

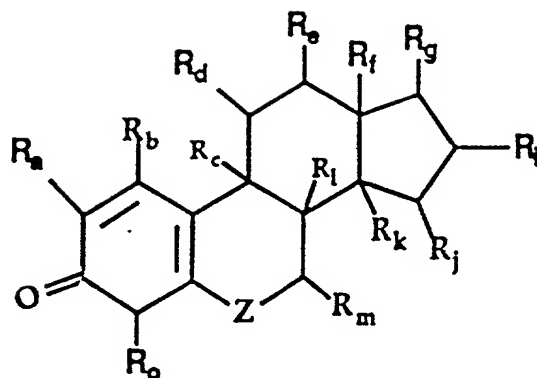
72 where, in each formula set forth above, each R<sub>1</sub> and R<sub>2</sub>

73 independently is -H, or substituted or unsubstituted alkyl,

74 alkenyl or alkynyl group of 1-6 carbons.

1 9. A compound of the general formula below, said

2 compound being a cell-mitosis-inhibiting compound:



3 wherein:

4 I.  $R_a-R_o$  are defined as follows:

5 A) each  $R_a, R_b, R_c, R_d, R_e, R_f, R_i, R_j, R_k, R_l,$   
 6  $R_m, R_o$  independently is  $-R_1, -OR_1, -OCOR_1,$   
 7  $-SR_1, -F, -NHR_2, -Br,$  or  $-I$ ; and  $R_g$  is  $-R_1,$   
 8  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$  or  
 9  $-C\equiv CH$ ;

10 or

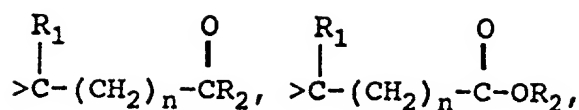
11 B) each  $R_a, R_b, R_c, R_f, R_k, R_l$  independently  
 12 is  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br,$   
 13 or  $-I$ ; and each  $R_d, R_e, R_i, R_j, R_m, R_o$   
 14 independently is  $=O, -R_1, -OR_1, -OCOR_1,$   
 15  $-SR_1, -F, -NHR_2, -Br, -I$ ; and  $R_g$  is  $=O,$   
 16  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$   
 17 or  $-C\equiv CH$ ;

18 and

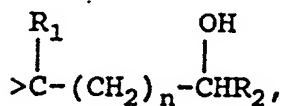
19 II.  $Z$  is defined as follows:

20  
 21  
 22 A)  $Z$  is  $Y$ , where  $Y$  is  $-O-, -N-, >CHR_1,$   
 23  
 24  
 25  $>C=O, >C-\overset{\overset{R_1}{|}}{(CH_2)_n}OR_2,$

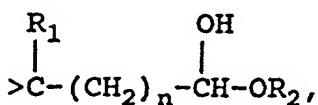
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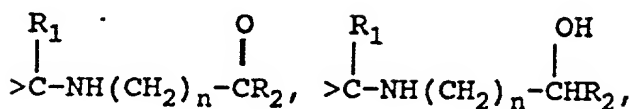
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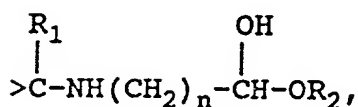
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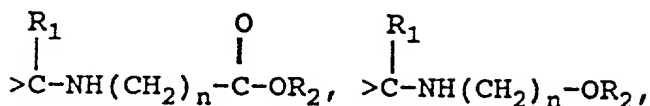
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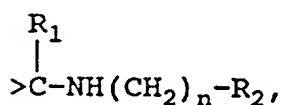
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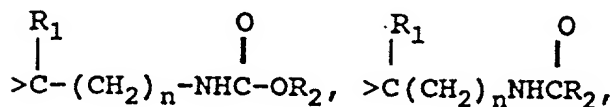
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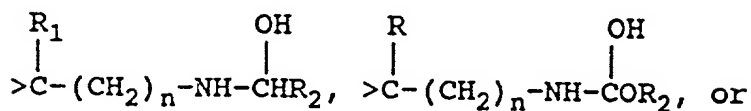
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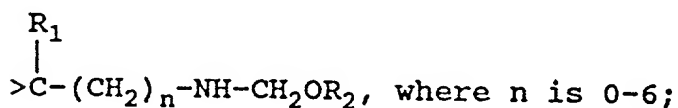
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57 or

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B) Z is  $\begin{array}{c} -\text{Y}-\text{CH}- \\ | \\ \text{R}_n \end{array}$  or  $\begin{array}{c} -\text{CH}-\text{Y}- \\ | \\ \text{R}_n \end{array}$ , where  $\text{R}_n$

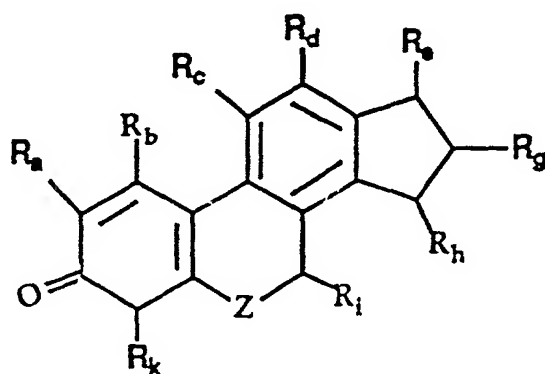
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is  $-\text{R}_1$ ,  $-\text{OR}_1$ ,  $-\text{SR}_1$ ,  $-\text{F}$ ,  $-\text{NHR}_2$ ,  $-\text{Br}$  or  $-\text{I}$ ;



62 where, in each formula set forth above, each  $R_1$  and  $R_2$   
63 independently is -H, or substituted or unsubstituted alkyl,  
64 alkenyl or alkynyl group of 1-6 carbons.

1 10. A compound of the general formula below, said  
2 compound being a cell-mitosis-inhibiting compound:



4 wherein:

5 I.  $R_a$ - $R_k$  are defined as follows:

6 A) each  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ ,  $R_g$ ,  $R_h$ ,  $R_i$ ,  $R_k$   
7 independently is  $-R_1$ ,  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  
8  $-F$ ,  $-NHR_1$ ,  $-Br$ , or  $-I$ ; and  $R_e$  is  $-R_1$ ,  $-OR_1$ ,  
9  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_1$ ,  $-Br$ ,  $-I$  or  $-C\equiv CH$ ;

10 or

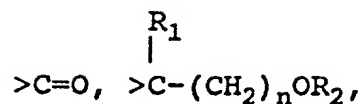
11 B) each  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ , independently is  $-R_1$ ,  
12  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_1$ ,  $-Br$ , or  $-I$ ;  
13 and each  $R_g$ ,  $R_h$ ,  $R_i$ ,  $R_k$  independently is  
14  $=O$ ,  $-R_1$ ,  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_1$ ,  $-Br$   
15 or  $-I$ ; and  $R_e$  is  $-R_1$ ,  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  
16  $-F$ ,  $-NHR_1$ ,  $-Br$ ,  $-I$  or  $-C\equiv CH$ ;

17 II.  $Z$  is defined as follows:

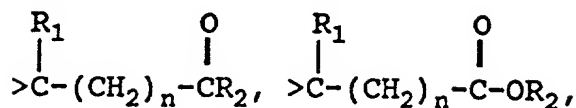
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1) Z is Y, where Y is  $\overset{\text{R}_1}{\text{O-}}, \text{-N-}, >\text{CHR}_1,$

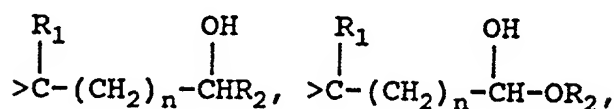
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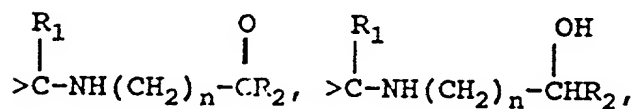
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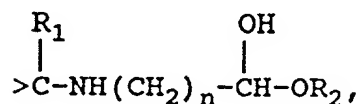
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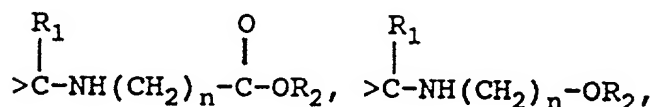
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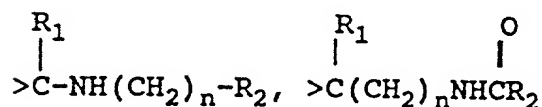
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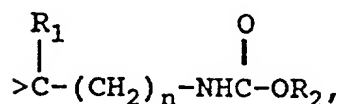
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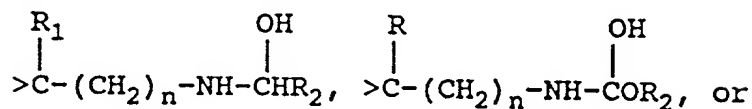
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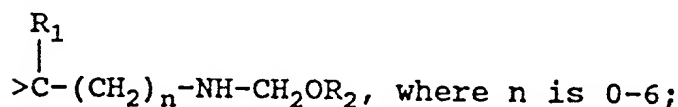
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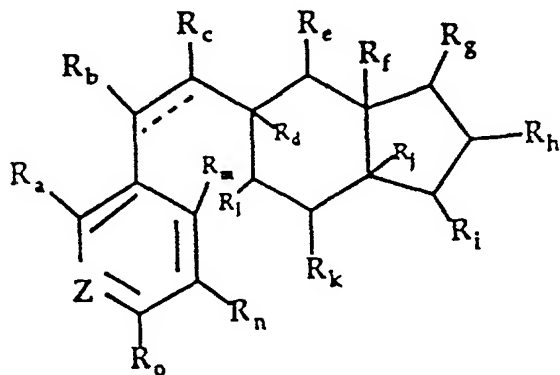
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51 or

52 Z is  $-Y-CH-$  or  $-CH-Y-$ , where  $R_n$   
 53  $\quad \quad \quad | \quad \quad \quad |$   
 54  $\quad \quad \quad R_n \quad \quad R_n$   
 55 is  $-R_1$ ,  $-OR_1$ ,  $-SR_1$ ,  $-F$ ,  
 56  $-NHR_2$ ,  $-Br$  or  $-I$ ;  
 57 where, in each formula set forth above, each  $R_1$  and  $R_2$   
 58 independently is  $-H$ , or substituted or unsubstituted alkyl,  
 59 alkenyl or alkynyl group of 1-6 carbons.

1 11. A compound of the general formula below, said  
 2 compound being a cell-mitosis-inhibiting compound:  
 3



4 wherein:  
 5 I.  $R_a-R_o$  are defined as follows:  
 6 A) each  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ ,  $R_e$ ,  $R_f$ ,  $R_g$ ,  $R_h$ ,  $R_j$ ,  $R_k$ ,  
 7  $R_l$ ,  $R_m$ ,  $R_n$ ,  $R_o$  independently is  $-R_1$ ,  $-OR_1$ ,  
 8  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$ , or  $-I$ ; and  $R_i$   
 9 is  $-R_1$ ,  $-OR_1$ ,  $-OCOR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$ ,  
 10  $-I$  or  $-C\equiv CH$ ;

11 or

12 B) each  $R_a, R_d, R_f, R_j, R_m, R_n, R_o$   
13 independently is  $-R_1, -OR_1, -OCR_1, -SR_1,$   
14  $-F, -NHR_2, -Br, -I$ ; and each  $R_b, R_c, R_e,$   
15  $R_g, R_h, R_k, R_l$  independently is  $=O, -R_1,$   
16  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br$  or  $-I$ ;  
17 and  $R_i$  is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F,$   
18  $-NHR_1, -Br, -I$  or  $-C\equiv CH$ ;

19 or

20 C) each  $R_a, R_b, R_c, R_d, R_f, R_j, R_m, R_n, R_o$   
21 independently is  $-R_1, -OR_1, -OCR_1, -SR_1, -F,$   
22  $-NHR_2, -Br, -I$ ; and each  $R_e, R_g, R_h, R_k, R_l$   
23 independently is  $=O, -R_1, -OR_1, -OCOR_1,$   
24  $-SR_1, -F, -NHR_1, -Br$  or  $-I$ ; and  $R_i$  is  $=O,$   
25  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br, -I$   
26 or  $-C\equiv CH$ ;

27 and

28 I. Z is defined as follows:

29  
30  
31 1) Z is X, where X is  $>COR_1, >\overset{O}{\underset{|}{CC}}-R_1, >\overset{O}{\underset{|}{CC}}-OR_1,$   
32  $>\overset{OH}{\underset{|}{CC}}-R_1, >\overset{OH}{\underset{|}{CC}}-OR$ ; or  
33  
34

35  
36  
37

$$Z \text{ is } \begin{array}{c} \text{=C-X'-} \\ | \\ R_p \end{array} \text{ or } \begin{array}{c} \text{-X'-C=} \\ | \\ R_p \end{array}, \text{ where } R_p$$

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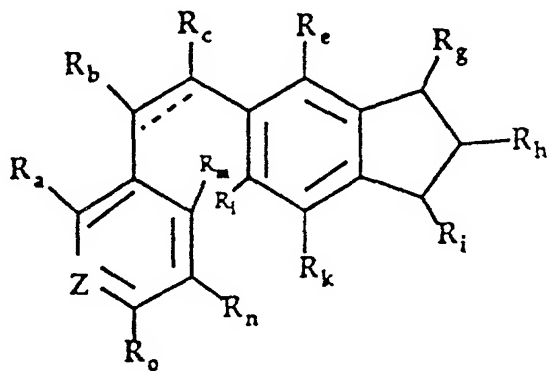
is  $-R_1$ ,  $-OR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$  or  $-I$ ;  
and  $X'$  is  $X$ , as defined above;  
or  $X'$  is  $>C=O$ ;

41 where, in each formula set forth above, each  $R_1$  and  $R_2$   
42 independently is -H, or substituted or unsubstituted alkyl,  
43 alkenyl or alkynyl group of 1-6 carbons; and the bond  
44 indicated by  $C\bullet\bullet C$  is absent or, in combination with the C-C  
45 bond is the unit  $HC=CH$ .

1  
2

12. A compound of the general formula below, said compound being a cell-mitosis-inhibiting compound:

3



4 wherein:

5 I.  $R_a-R_o$  are defined as follows:

6 A) each  $R_a, R_b, R_c, R_e, R_g, R_h, R_k, R_l, R_m, R_n,$   
7  $R_o$  independently is  $-R_1, -OR_1, OCOR_1, -SR_1,$   
8  $-F, -NHR_2, -Br, \text{ or } -I$ ; and  $R_i$  is  $-R_1, -OR_1,$   
9  $-OCOR_1, -SR_1, -F, -NHR_2, -Br, -I$  or  $-C\equiv CH$ ;

10 or

11 B) each  $R_a, R_e, R_l, R_m, R_n, R_o$  independently  
12 is  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_2, -Br,$   
13  $-I$ ; and each  $R_b, R_c, R_g, R_h$  is  $=O, -R_1,$   
14  $-OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br$  or  $-I$ ;  
15 and  $R_i$  is  $=O, -R_1, -OR_1, -OCOR_1, -SR_1, -F,$   
16  $-NHR_1, -Br, -I$  or  $-C\equiv CH$ ;

17 or

18 C) each  $R_a, R_b, R_c, R_e, R_k, R_m, R_n, R_o$   
19 independently is  $-R_1, -OR_1, OCOR_1, -SR_1,$   
20  $-F, -NHR_2, -Br, -I$ ; and each  $R_g, R_h$   
21 independently is  $=O, -R_1, -OR_1, -OCOR_1,$   
22  $-SR_1, -F, -NHR_1, -Br$  or  $-I$ ; and  $R_i$  is  $=O,$   
23  $-R_1, -OR_1, -OCOR_1, -SR_1, -F, -NHR_1, -Br, -I$   
24 or  $-C\equiv CH$ ;

25 and

26 II.  $Z$  is defined as follows:

27  
28  
29 A)  $Z$  is  $X$ , where  $X$  is  $>COR_1, >\overset{O}{\underset{|}{CC}}-R_1, >\overset{O}{\underset{|}{CC}}-OR_1,$

30  
31  $\overset{OH}{\underset{|}{>CC}}-R_1, \overset{OH}{\underset{|}{>CC}}-OR;$   
32

33 or

34 B)  $Z$  is  $=\underset{\underset{R_p}{|}}{C}-X'-$  or  $-X'-\underset{\underset{R_p}{|}}{C}=$ , where  $R_p$   
35  
36

37 is  $-R_1$ ,  $-OR_1$ ,  $-SR_1$ ,  $-F$ ,  $-NHR_2$ ,  $-Br$  or  $-I$ ,  
 38 and  $X'$  is  $X$ , as defined above;  
 39 or  $X'$  is  $=O$ ;  
 40 where, in each formula set forth above, each  $R_1$  and  $R_2$   
 41 independently is  $-H$ , or substituted or unsubstituted alkyl,  
 42 alkenyl or alkynyl group of 1-6 carbons; and the bond  
 43 indicated by  $C\bullet\bullet\bullet C$  is absent or, in combination with the  $C-C$   
 44 bond is the unit  $HC=CH$ .

1 13. The method of claim 1, wherein said  
 2 cell-mitosis-inhibiting composition is 2-methoxyestradiol.

1 14. The method of claim 1, wherein said  
 2 cell-mitosis-inhibiting composition is 2-fluoroestradiol.

1 15. The method of claim 1, wherein said  
 2 cell-mitosis-inhibiting composition is 2-bromoestradiol.

1 16. The method of claim 1, wherein said  
 2 cell-mitosis-inhibiting composition is 2-methoxyestrone.

1 17. The method of claim 1, wherein said cell-  
 2 mitosis-inhibiting composition is 17-ethynylestradiol.

1 18. The method of claims 1 or 2 wherein said  
 2 compound is further characterized in that

3 A)  $Z'$  is  $=C-X'-$  or  $-X'-C=$ ; and  
 4  $\quad \quad \quad | \quad \quad \quad |$   
 5  $\quad \quad \quad R_n \quad \quad \quad R_n$   
 6  $Z''$  is  $-Y-CH-$  or  $-CH-Y-$ ; or  
 7  $\quad \quad \quad | \quad \quad \quad |$   
 8  $\quad \quad \quad R_p \quad \quad \quad R_p$   
 9 B)  $Z'$  is  $X$ ; and  $Z''$  is  $-Y-CH-$  or  $-CH-Y-$ ; or  
 10  $\quad \quad \quad \quad \quad | \quad \quad \quad |$   
 11  $\quad \quad \quad \quad \quad R_p \quad \quad \quad R_p$

12 C) Z' is  $\begin{array}{c} \text{=C-X'-} \\ | \\ \text{R}_n \end{array}$  or  $\begin{array}{c} \text{-X'-C=} \\ | \\ \text{R}_n \end{array}$ ; and Z" is Y.  
 13  
 14

1 19. The method of claims 3 or 4 wherein said  
 2 compound is further characterized in that Z is  
 3  $\begin{array}{c} \text{-Y-CH-} \\ | \\ \text{R}_n \end{array}$  or  $\begin{array}{c} \text{-CH-Y-} \\ | \\ \text{R}_n \end{array}$ .  
 4  
 5

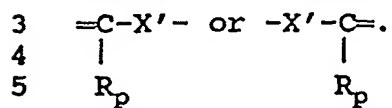
1 20. The method of claims 5 or 6 wherein said  
 2 compound is further characterized in that Z is  
 3  $\begin{array}{c} \text{=C-X'-} \\ | \\ \text{R}_p \end{array}$  or  $\begin{array}{c} \text{-X'-C=} \\ | \\ \text{R}_p \end{array}$ .  
 4  
 5

1 21. The compound of claims 7 or 8, wherein said  
 2 compound is further characterized in that  
 3 A) Z' is  $\begin{array}{c} \text{=C-X'-} \\ | \\ \text{R}_n \end{array}$  or  $\begin{array}{c} \text{-X'-C=} \\ | \\ \text{R}_n \end{array}$ ; and  
 4  
 5 Z" is  $\begin{array}{c} \text{-Y-CH-} \\ | \\ \text{R}_p \end{array}$  or  $\begin{array}{c} \text{-CH-Y-} \\ | \\ \text{R}_p \end{array}$ ; or  
 6  
 7  
 8 B) Z' is X; and Z" is  $\begin{array}{c} \text{-Y-CH-} \\ | \\ \text{R}_p \end{array}$  or  $\begin{array}{c} \text{-CH-Y-} \\ | \\ \text{R}_p \end{array}$ ; or  
 9  
 10  
 11 C) Z' is  $\begin{array}{c} \text{=C-X'-} \\ | \\ \text{R}_n \end{array}$  or  $\begin{array}{c} \text{-X'-C=} \\ | \\ \text{R}_n \end{array}$ ; and Z" is Y.  
 12  
 13  
 14

1 22. The compound of claims 9 or 10, wherein said  
 2 compound is further characterized in that Z is  
 3  $\begin{array}{c} \text{-Y-CH-} \\ | \\ \text{R}_n \end{array}$  or  $\begin{array}{c} \text{-CH-Y-} \\ | \\ \text{R}_n \end{array}$ .  
 4  
 5



1            23. The compound of claims 11 or 12, wherein said  
2 compound is further characterized in that Z is



1            24. The method of any one of claims 1-6, wherein at  
2 least one of  $\text{R}_a \rightarrow \text{R}_p$  is  $-\text{OCH}_3$ .

1            25. The compound of any one of claims 7-12, wherein  
2 at least one of  $\text{R}_a \rightarrow \text{R}_p$  is  $-\text{OCH}_3$ .